

Project FOCUS
Best Lessons
FIFTH GRADE

Title of Lesson: Circuits

Theme: Physical Science

Unit Number: 5 **Unit Title:** Electricity & Magnetism

Performance Standard(s) Covered (enter code):

S5P3: Students will investigate electricity, magnetism, and their relationship.

S5CS1b: Students will use ideas of system...in exploring scientific and technological matters

S5CS8a: Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.

S5P3c: Investigate common materials to determine if they are insulators or conductors of electricity.

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Series circuit, parallel circuit, electric current, conductors, insulators

Learning Activity (description in steps)

Abstract (limit 100 characters): The students will learn about the differences and similarities between series and parallel circuits, what it takes to build a functional circuit, and how conductors/insulators affect electricity.

Details: (NOTE: This is a 2-part experiment.) Separate materials per group and read the instructions before passing materials out. Have the students draw what they think a circuit should look like before the actual experiment. Separate class into groups of 3-4 students and pass out the materials. Students will then construct a series circuit. Then have the students construct a parallel circuit. Ask them to see what happens when a light bulb or different part of the circuit is removed. Does the electricity still flow? After testing series/parallel circuits, use various conductors and insulators to see if the light bulb still lights up.

Materials Needed (type and quantity): Each group needs: 1 D battery, a battery holder, insulated wire with the ends stripped, light bulbs, and masking tape (only if the wires will not stay in the battery holder). For the conductors/insulators give each group an object (eraser, paper clip, rubber band, staple, foil, chalk, etc. to see how they affect the circuit.

Notes and Tips (general changes, alternative methods, cautions): Some of the batteries got hot if the light bulb was left on for an extended period of time. Use caution. Show a video and do the smartboard activity before beginning the lesson to get the students engaged in the topic. Excess

batteries and light bulbs may be useful; some may die during the experiment. The experiment may take two days, if this is the case it will be helpful to devote one day to just circuits and use the other day to explore conductors and insulators.

Sources/References:

- 1) https://www.youtube.com/watch?v=HIJcW4_z_DM
- 2) Georgia HSP Science (pgs 188-195)
- 3) <http://www.sciencekids.co.nz/gamesactivities/circuitsconductors.html>